

ALGEBRAIC EXPRESSIONS

UNIT 1

Day	Section	Topic	Assignment
1	1.1	The Real Numbers	Pg 12: 1-14 all (Done) Repeating decimals Wksht
2	1.1	Properties of Real Numbers Order of Operations	Pg 14: 51-66,85-88 all (Done) Pg 12-13: 15-42 all (Done) Properties Worksheet pg 23: 1-26
3	1.2	Order and Absolute Value	Pg 23-24: 29-48, 60-64
4	1.6	Exponents	Pg 33: 1-12 all (Done) Pg 36: 95-98 Pg 61: 29-52 Pg 63-64: 97-100
5		More Exponents	Exponents Worksheet Some Interesting Probs. Wksht
6		Review	Worksheet
7	Test Unit 1		

STUDENTS: You will not be able to check your packet answers until I return the packet to you (obviously).

DAY 1: Pg 12: 1-14 all (Done in packet) –

1. A,B,C,D,F 2. B,C,D,F 3. D,F 4. A,B,C,D,F 5. E,F 6. D, F
7. A rational number CAN be written as a fraction; an irrational numbers CANNOT be written as a fraction.
8. These values are ESTIMATES for π not actually π .
9. Any fraction, terminating or repeating decimal that does not reduce to an integer
10. Any negative integer
11. 1, 3
12. 0, 1, 3
13. $-6, \frac{-12}{4}, 0, 1, 3$
14. $-6, \frac{-12}{4}, \frac{-5}{8}, 0, \frac{1}{4}, 1, 3$

Repeating decimals Wksht – will check answers in class

DAY 2: Pg 14: 51-66,85-88 all (Done), Pg 12-13: 15-42 all (Done), Properties Worksheet, pg 23: 1-26

D) Exercises: page 14 #51 – 66

For #63 – 66 Show work (distribution and reducing of fractions) --- DO NOT use a calculator.

51. *Distributive (x over +)*

52. *Commutative Multiplication*

53. *Inverse Multiplication*

54. *Inverse Multiplication*

55. *Identity Addition*

56. *Closure Additon*

57. *No $2 - 4 = -2$ but $4 - 2 = 2$*

58. *No $(4 - 2) - 1 = 1$ but $4 - (2 - 1) = 3$*

59. $p(8 - 14) = -6p$

60. $x(15 - 10) = 5x$

61. $-3z + 3y$

62. $-2m - 2n$

63. $\frac{10}{11}(22z) = \frac{10}{1}(2z) = 20z$

64. $\left(\frac{3}{4}r\right)(-12) = \left(\frac{3}{1}r\right)(-3) = -9r$

65. $-\frac{1}{4}(20m + 8y - 32z) =$
 $-\frac{1}{4}(20m) - \frac{1}{4}(8y) - \frac{1}{4}(-32z)$
 $-1(5m) - 1(2y) - 1(-8z)$
 $-5m - 2y + 8z$

66. $\frac{3}{8}\left(\frac{16}{9}y + \frac{32}{27}z - \frac{40}{9}\right) = \frac{3}{8}\left(\frac{16}{9}y\right) - \frac{3}{8}\left(\frac{32}{27}z\right) - \frac{3}{8}\left(\frac{40}{9}\right)$
 $1\left(\frac{2}{3}y\right) - 1\left(\frac{4}{9}z\right) - 1\left(\frac{5}{3}\right) = \frac{2}{3}y + \frac{4}{9}z - \frac{5}{3}$

Always reduce
before multiplying –
Use cancellation

Exercises: page 16 #85 – 88 (Rewrite the problem to indicate the mental math you are doing.)

85. $(72 + 28)17 = (100)(17) = 1700$

86. $32(80 + 20) = 32(100) = 3200$

87. $\left(123\frac{5}{8} - 23\frac{5}{8}\right)1\frac{1}{2} =$

distributive property

$100\left(1\frac{1}{2}\right) = 100(1.5) = 150$

$100\left(1\frac{1}{2}\right) =$
 $100(1) + 100\left(\frac{1}{2}\right)$
 $100 + 50 = 150$

88. $17\frac{2}{5}\left(14\frac{3}{4} - 4\frac{3}{4}\right) =$

$17\frac{2}{5}(10) = \frac{87}{5}(10) =$

$87(2) = 174$

- B) Exercises: page 12 #15 – 42 Show ALL work
For problems #15-21 show the factors you are multiplying and the solution

$$\begin{array}{ll}
 15. & 3 \times 3 \times 3 \times 3 = 81 \\
 16. & -(3 \times 3 \times 3 \times 3 \times 3) = -243 \\
 17. & -(2 \times 2 \times 2 \times 2 \times 2) = -64 \\
 18. & (-3) \times (-3) \times (-3) \times (-3) = 81 \\
 19. & (-2) \times (-2) \times (-2) \times (-2) \times (-2) = -32 \\
 20. & (-3) \times (-3) \times (-3) \times (-3) \times (-3) = -243 \\
 21. & (-3) \times (-3) \times (-3) \times (-3) \times (-3) \times (-3) = 729 \\
 22. & \text{negative} \dots \text{positive} \\
 23. & -5^2 = -(5 \times 5) = -25 \\
 & (-5)^2 = (-5) \times (-5) = 25 \\
 & (-5) \\
 & -(-5)^2 = -[(-5) \times (-5)] = -(25) = -25 \\
 & = 100 \\
 24. & -(-5)^3 - (-5)^2 = \\
 & -[(-5) \times (-5) \times (-5)] - [(-5) \times (-5)] \\
 & = -(-125) - 25
 \end{array}$$

- B) Exercises: page 12 #15 – 42 Show ALL work (Continued)
For problems 25-42 copy the problem and show all steps
All problems should be completed WITHOUT a calculator
Fraction work should be shown (LCD, Reducing) --- DO NOT use a calculator.

$$\begin{array}{lll}
 25. & 8^2 - (-4) + 11 & 26. \quad 16(-9) - 4 \\
 & 64 + 4 + 11 & -144 - 4 = -148 \\
 & 68 + 11 = 79 & \\
 27. & -2 \cdot 5 + 12 \div 3 & \\
 & -10 + 12 \div 3 & \\
 & -10 + 4 = -6 & \\
 28. & 9 \cdot 3 - 16 \div 4 & 29. \quad -4(9 - 8) + (-7)(2)^3 \\
 & 27 - 16 \div 4 & -4(1) + (-7)(2)^3 \\
 & 27 - 4 = 23 & -4(1) + (-7)(8) \\
 & & -4(1) + (-56) = -60 \\
 & + 48 = 18 & 30. \quad 6(-5) - (-3)(2)^4 \\
 & & -30 - (-3)(2)^4 \\
 & & -30 - (-3)(16) \\
 & & -30 - (-48) = -30 \\
 31. & (4 - 2^3)(-2 + \sqrt{25}) & 32. \quad [-3^2 - (-2)][\sqrt{16} - 2^3] \\
 & \left(-\frac{2}{9} - \frac{1}{4}\right) - \left[-\frac{5}{18} - \left(-\frac{1}{2}\right)\right] & 33. \\
 & (4 - 8)(-2 + 5) & [-9 - (-2)][4 - 8] \\
 & (-4)(3) = -12 & (-9 + 2)(-4) \\
 & \left(-\frac{8}{36} - \frac{9}{36}\right) - \left[-\frac{5}{18} - \left(-\frac{9}{18}\right)\right] & (-7)(-4) = 28 \\
 & \left(-\frac{17}{36}\right) - \left[-\frac{5}{18} + \frac{9}{18}\right] & \\
 34. & \left[-\frac{5}{8} - \left(-\frac{2}{5}\right)\right] - \left(\frac{3}{2} - \frac{11}{10}\right) & \\
 & \left[-\frac{25}{40} - \left(-\frac{16}{40}\right)\right] - \left(\frac{15}{10} - \frac{11}{10}\right) & \\
 & \left[-\frac{9}{40}\right] - \left(\frac{4}{10}\right) & \\
 & \left[-\frac{9}{40}\right] - \left(\frac{16}{40}\right) = -\frac{25}{40} = -\frac{5}{8} &
 \end{array}$$

$$35. \frac{-8 + (-4)(-6) \div 12}{4 - (-3)}$$

$$\frac{-8 + 24 \div 12}{4 + 3}$$

$$\frac{-8 + 2}{7} = \frac{-6}{7}$$

$$36. \frac{15 \div 5 \cdot 4 \div 6 - 8}{-6 - (-5) - 8 \div 2}$$

$$\frac{3 \cdot 4 \div 6 - 8}{-6 - (-5) - 4}$$

$$\frac{12 \div 6 - 8}{-6 + 5 - 4}$$

$$\frac{2 - 8}{-1 - 4} = \frac{-6}{-5} = \frac{6}{5}$$

$$37. 2(q - r)$$

$$\begin{aligned} 2(8 - (-10)) \\ 2(8 + 10) \\ 2(18) = 36 \end{aligned}$$

$$38. \frac{p}{q} + \frac{3}{r}$$

$$\frac{-4}{8} + \frac{3}{-10}$$

$$\frac{-1}{2} + \frac{3}{-10}$$

$$-\frac{5}{10} - \frac{3}{10} = -\frac{8}{10} = -\frac{4}{5}$$

$$39. \frac{q + r}{q + p}$$

$$\frac{8 + (-10)}{8 + (-4)}$$

$$\frac{-2}{4} = -\frac{1}{2}$$

$$40. \frac{3q}{3p - 2r}$$

$$\frac{3(8)}{3(-4) - 2(-10)}$$

$$\frac{24}{-12 - (-20)}$$

$$\frac{24}{-12 + 20} = \frac{24}{8} = 3$$

$$41. \frac{3q}{r} - \frac{5}{p}$$

$$\frac{3(8)}{-10} - \frac{5}{-4}$$

$$\frac{24}{-10} + \frac{5}{4}$$

$$\frac{12}{-5} + \frac{5}{4}$$

$$-\frac{48}{20} + \frac{25}{20} = -\frac{23}{20}$$

$$42. \frac{\frac{q}{4} - \frac{r}{5}}{\frac{p}{2} + \frac{q}{2}}$$

$$\frac{\frac{8}{4} - \frac{-10}{5}}{\frac{-4}{2} + \frac{8}{2}}$$

$$\frac{2 - (-2)}{-2 + 4} = \frac{4}{2} = 2$$

Properties Worksheet

Side 1 – page 51 at bottom of sheet

- 1) C 2) B 3) G 4) D 5) I 6) G 7) C 8) I 9) A
 10) B 11) E 12) F 13) G 14) B 15) K 16) G 17) D
 18) K 19) G 20) D 21) B 22) J

Side 2 – page 52 at bottom of sheet

- 1) I 2) G 3) C 4) K 5) B 6) K 7) G 8) E 9) D
 10) A 11) J 12) I 13) B 14) C 15) B 16) G 17) F
 18) D 19) K 20) I 21) G 22) E

pg 23: 1-26 Keep in mind that you should NOT NEED A CALCULATOR!

- 1) 0; $2 \neq -2$ 2) 0; $27 \neq -27$ 3) 1; $20 = 20$ 4) 1; $4 = 4$
 5) True

6) $-|3| = -3$ 7) $-5, -4, -2, -\sqrt{3}, \sqrt{6}, \sqrt{8}, 3$

8) $-\sqrt{6}, -1, \sqrt{2}, \sqrt{7}, \sqrt{8}, 3, 4$

9) $\frac{3}{4}, \frac{7}{5}, \sqrt{2}, \frac{22}{15}, \frac{8}{5}$ 10) $-3, -\sqrt{5}, -\frac{9}{5}, -\sqrt{3}, -\frac{8}{5}, -\frac{9}{8}$ 11) FALSE

12) In the second statement, a number cannot be both greater than 5 and less than 2.

13) $-5 < y$ 14) $<$ 15) $-6 < 15$ 16) $-14 < 2$ 17) $1 \leq 2$ 18) $1 \leq 7$

19) 8 20) 6 21) 6 22) 2 23) 4 24) 14 25) 5 26) 8

27) 24 28) $\frac{33}{5}$

DAY 3 - Pg 23-24: 29-48, 60-64

29) $\pi - 3$ 30) $5 - \pi$ 31) $3 - y$ 32) $x - 4$ 33) $8 - 2k$ 34) $3r - 15$

35) $y - x$ 36) $x - y$ 37) $3 + x^2$ 38) $x^2 + 4$

39) Addition Prop. of Order

40) Mult. Prop. of Order

41) Transitive Prop. of Order

42) Mult. Prop. of Order

43) Addition Prop. of Order

44) Triangle Inequality

45) Triangle Inequality

46) Prop. of Absolute Value

47) Prop. of Absolute Value, $|a| \geq 0$

48) Prop. of Absolute Value, $b \neq 0$

60) $x > 0 \text{ AND } y > 0$

61)

62)

OR

$x \neq 0 \text{ AND } y > 0$

$x > 0 \text{ AND } y < 0$

$x < 0 \text{ AND } y < 0$

OR

$x < 0 \text{ AND } y > 0$

63) $x < 0$

64)

$x < 0 \text{ AND } y < 0$

OR

$x > 0 \text{ AND } y > 0$

DAY 4: Pg 36: 95-98, Pg 61: 29-52, Pg 63-64: 97-100

Pg 36: 95-98

95) 1,000,000

96) 144

97) 32

98) 81

Pg 61: 29-52

29) 1

30) $\frac{1}{243}$

31) $m^{7/3}$

32) $x^{6/5}$

$$\begin{array}{llll}
33) (1+n)^{5/4} & 34) \frac{1}{(m+7)^{5/6}} & 35) \frac{6z^{2/3}}{y^{5/4}} & 36) \frac{4a^{1/2}}{b^{7/3}} \\
37) 64a^{1/4}b^{37/2} & 38) \frac{y^{7/3}}{2x^{32/3}} & 39) \frac{r^6}{s^{15}} & 40) \frac{p^2}{q^{10}} \\
41) -\frac{1}{ab^3} & 42) \frac{1}{r} & 43) 12^{9/4}y & 44) \frac{1}{12k^{5/2}} \\
45) \frac{1}{2p^2} & 46) \frac{h^{1/3}t^{1/5}}{k^{2/5}} & 47) \frac{m^3p}{n} & 48) m^{6/5} \\
49) -4a^{5/3} & 50) \frac{16}{y^{11/12}} & 51) \frac{1}{(k+5)^{1/2}} & 52) \frac{1}{(x+y)^{1/4}}
\end{array}$$

Pg 63-64: 97-100

97) $a^{21} = 27,000$

98) $a^6 = 25$

99) by a factor of 27

100) by a factor of 4

DAY 5: Exponents Worksheet, Some Interesting Probs. Wksht

Exponent Worksheet (1)

PART A

$$\begin{array}{llll}
1) a^{13} & 2) y^{11/15} & 3) x^2 & 4) 3^{3m-3} \\
5) 1 & 6) \frac{1}{64} & 7) (a+7)^{3/4} &
\end{array}$$

PART B

- 1) $32x^{10}y^{15}$ 2) $2x^8y^5$ 3) x^3y^4 4) x^{6p+3}
 5) y^6 6) $x^{1/2}y^{1/20}$ 7) $\frac{64x^{5/2}}{y^2}$

PART C

- 1) a^3 2) $x^{1/9}$ 3) m^{12x} 4) $\frac{1}{(x+2)^2}$ 5) 4^{a+7}

PART D

- 1) $\frac{18n^8}{5m^6}$ 2) $\frac{9}{32}$ 3) $3^{1/7}$ 4) $\frac{27}{8}$ 5) $\frac{x^5}{4z^2}$

Exponent Worksheet (2)

- 1) $\frac{x^7}{625}$ 2) $\frac{3}{4}k^{18}$ 3) $4^{1/7}x^{36/7}$ 4) y 5) $\frac{9y}{5m^2}$
 6) $\frac{3x^5}{4y^{1/5}z^{1/9}}$ 7) $\frac{30}{p^{r-3}}$ 8) $-4z^{3r+3}$ 9) $\frac{b^{-y+2}}{8}$
 10) $27x^{n+2}$ 11) z 12) x^{-4y+1}

Some Interesting Probs. Wksht

- 1) in class 2) 27,000 3) 4 4) 4 5) 6 6) 9 7) 1

DAY 6: Unit 1 Review Worksheet

- 1) Q, R 2) W, I, Q, R 3) I, Q, R 4) Ir, R

- 5) Commutative Property of Addition 6) Multiplicative Inverse
 7) Additive Identity 8) Closure of Addition
 9) Property of Absolute Values 10) Distributive Property
 11) Commutative Property of Multiplication 12) Additive Inverse
 13) Associative Property of Addition

- 14) -1 15) $\frac{3}{8}$ 16) -6 17) -7 18) p^2+10 19)

$$\pi - x$$

20) $\sqrt{26}-5$ 21) x^2+4 22) $\frac{9}{x^4}$ 23) $2a^{2x}$ 24) $\frac{m^2}{7}$

25) $\frac{x^5}{25}$ 26) $\frac{17}{45}$ 27) $\frac{631}{99000}$ 28) $\frac{517}{999}$